



# Service Manual

**CIRCUIT & MECHANISM  
DESCRIPTIONS  
REPAIR & ADJUSTMENTS**



**ORDER NO.  
ARP-768-0**

**STEREO TURNTABLE**

# **PL-460(BK) PL-460**

- PL-460[BK] is Black versions of PL-460.
- Models PL-460 come in seven versions distinguished as follows:

| Type | Applicable model      |                       | Power requirement                              | Destination                      |
|------|-----------------------|-----------------------|--|----------------------------------|
|      | PL-460                | [BK]                  |  |                                  |
| KU   | <input type="radio"/> | —                     | AC 120V only                                   | U.S.A. model                     |
| KUT  | <input type="radio"/> | —                     | AC 120V only                                   | U.S.A. model (without cartridge) |
| KC   | <input type="radio"/> | —                     | AC 120V only                                   | Canada model                     |
| KCT  | <input type="radio"/> | —                     | AC 120V only                                   | Canada model (without cartridge) |
| R    | <input type="radio"/> | <input type="radio"/> | AC 110V ~ 120V, AC 220V ~ 240V<br>(Switchable) | General export model             |
| WEM  | <input type="radio"/> | <input type="radio"/> | AC 220V ~ 240V                                 | European Continent model         |
| WB   | <input type="radio"/> | <input type="radio"/> | AC 220V ~ 240V                                 | United kingdom model             |

- This service manual is applicable to the PL-460/KU, KUT, KC, KCT and R, WEM, WB types.
- Both models PL-460[BK] and PL-460 have the same basic mechanism and performance.  
The only difference is in appearance.
- For servicing the PL-460/KUT, KC, KCT, R, and WEM, WB types. Please see pages 23 ~ 27.
- Ce manuel d'instruction se réfère au mode de réglage, en français.
- Este manual de servicio trata del método de ajuste escrito en español.

**PIONEER ELECTRONIC CORPORATION** 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan  
**PIONEER ELECTRONICS (USA) INC.** P.O. Box 1760, Long Beach, California 90801 U.S.A.  
TEL: (800) 421-1404, (800) 237-0424

**PIONEER ELECTRONIC (EUROPE) N.V.** Keetberglaan 1, 2740 Beveren, Belgium TEL: 03/775-28-08  
**PIONEER ELECTRONICS AUSTRALIA PTY. LTD.** 17B-184 Boundary Road, Braeside, Victoria 3195, Australia  
TEL: (03) 580-9911

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## 1. SPECIFICATIONS

### Motor and Turntable

|                             |   |
|-----------------------------|---|
| Drive System .....          | Belt-drive  |
| Motor .....                 | DC servo motor  |
| Turntable Platter .....     | 304 mm diam. aluminum alloy die-cast                              |
| Speeds .....                | 33-1/3 and 45 rpm   |
| Wow and Flutter .....       | Less than 0.05% (WRMS)<br>± 0.07% WTD Peak (DIN)                  |
| Signal-to-Noise-Ratio ..... | More than 68 dB (DIN-B)<br>(with Pioneer cartridge model PC-290T) |

### Tonearm

|                            |                             |
|----------------------------|-----------------------------|
| Type .....                 | Integrated straight tonearm |
| Effective Arm Length ..... | 221 mm                      |

### PC-290T Specifications

|                          |                                     |
|--------------------------|-------------------------------------|
| Type .....               | IM type                             |
| Stylus .....             | 0.6 mil diamond (PN-290T)           |
| Output Voltage .....     | 2.5 mV<br>(1 kHz, 5 cm/s LAT. Peak) |
| Tracking Force .....     | 1.0 g to 1.5 g (proper 1.25 g)      |
| Frequency Response ..... | 10 to 30,000 Hz                     |
| Recommended Load .....   | 50 kΩ                               |
| Weight .....             | 6 g                                 |

### Subfunctions

Auto return, auto cut, arm elevation, free stop hinges

### Miscellaneous

|                               |   |
|-------------------------------|---|
| Power Requirements            |   |
| WEM, WB models .....          | AC 220 V – 240 V~<br>50, 60 Hz                      |
| KUT, KCT, KU, KC models ..... | AC 120 V, 60 Hz                                     |
| R model .....                 | 110 V – 120 V/220 V-240 V<br>(switchable), 50/60 Hz |

### Power Consumption

|                               |     |
|-------------------------------|-----|
| WEM, WB models .....          | 2 W |
| KUT, KCT, KU, KC models ..... | 2 W |
| R model .....                 | 2 W |

Dimensions ..... 420 (W) x 108 (H) x 374 (D) mm  
                                  16-1/2 (W) x 4-1/4 (H) x 14-3/4 (D) in.

Weight ..... 3.9 kg/8 lb 10 oz

### Accessories

|                              |   |
|------------------------------|---|
| EP Adapter .....             | 1 |
| Operating Instructions ..... | 1 |

### NOTE:

Specifications and design subject to possible modification without notice, due to improvements.

QUESTIONNAIRE

MODEL \_\_\_\_\_

One Model per questionnaire

Dear Servicer,

Thank you for your cooperation in the post-sale service of Pioneer products.

This questionnaire is used as a tool to improve the serviceability of our products and service manuals. Please evaluate this model and service manual by answering the following questions. Your ideas may be realized in our future products. Your answers will be appreciated. Thank you.

PIONEER ELECTRONIC CORP.

T. Nakagawa, Manager, Service Section, International Division

| 1. SERVICING EVALUATION |                          | Circle applicable number: |  |  | Good | Fair | Poor |    |    |
|-------------------------|--------------------------|---------------------------|--|--|------|------|------|----|----|
| a.                      | Disassembly/Re-assembly: |                           |  |  | 1    | 2    | 3    | *4 | *5 |
| b.                      | Circuit Checks:          |                           |  |  | 1    | 2    | 3    | *4 | *5 |
| c.                      | Replacement of Parts:    |                           |  |  | 1    | 2    | 3    | *4 | *5 |
| d.                      | Adjustment (s):          |                           |  |  | 1    | 2    | 3    | *4 | *5 |

\* If (4) or (5) was circled, please be specific.

e. Your advice, opinion or ideas related to servicing this product.

**2. SERVICE MANUAL EVALUATION**

a. Circuit & Mechanism Description

b. Circuit Diagram

**3. OTHER**

Please describe other areas of servicing which you may find difficult.

Completed by :

Date :

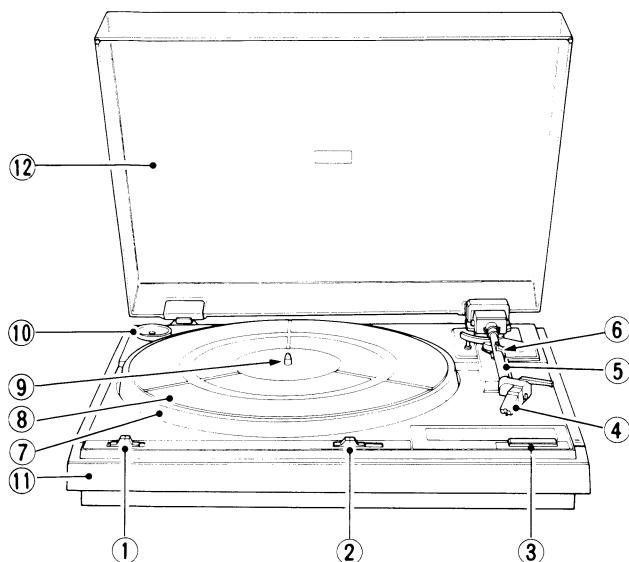
Company Name :

Address :

City/State/Zip :

Please send this form filled to the distributor in your country.

## 2. PANEL FACILITIES



### ① SPEED switch

Set this switch in accordance with the speed of the record which is to be played.

[33]: For 33-1/3 rpm records.

[45]: For 45 rpm records.

### ② ARM ELEVATION switch

- Use the switch for manual play.
- Use the switch to suspend record play temporarily.
- Use the switch when changing the tracks during actual play.

[UP]: The tonearm rises (the stylus moves away from the record).

[DOWN]: The tonearm descends (the stylus is lowered onto the record).

### ③ STOP switch

Depress this switch to stop play.

### ④ CARTRIDGE (PC-290T)

#### NOTE:

*A cartridge is not provided with the KUT and KCT models, so your own cartridge should be mounted, following the instructions laid down in CARTRIDGE MOUNTING.*

### ⑤ TONEARM

### ⑥ ARM REST

This serves to hold and clamp the tonearm. When moving the tonearm, release the clamp.

### ⑦ PLATTER

### ⑧ RUBBER MAT

### ⑨ PLATTER SHAFT

### ⑩ EP ADAPTER

This is used when playing records with a large center hole.

### ⑪ CABINET

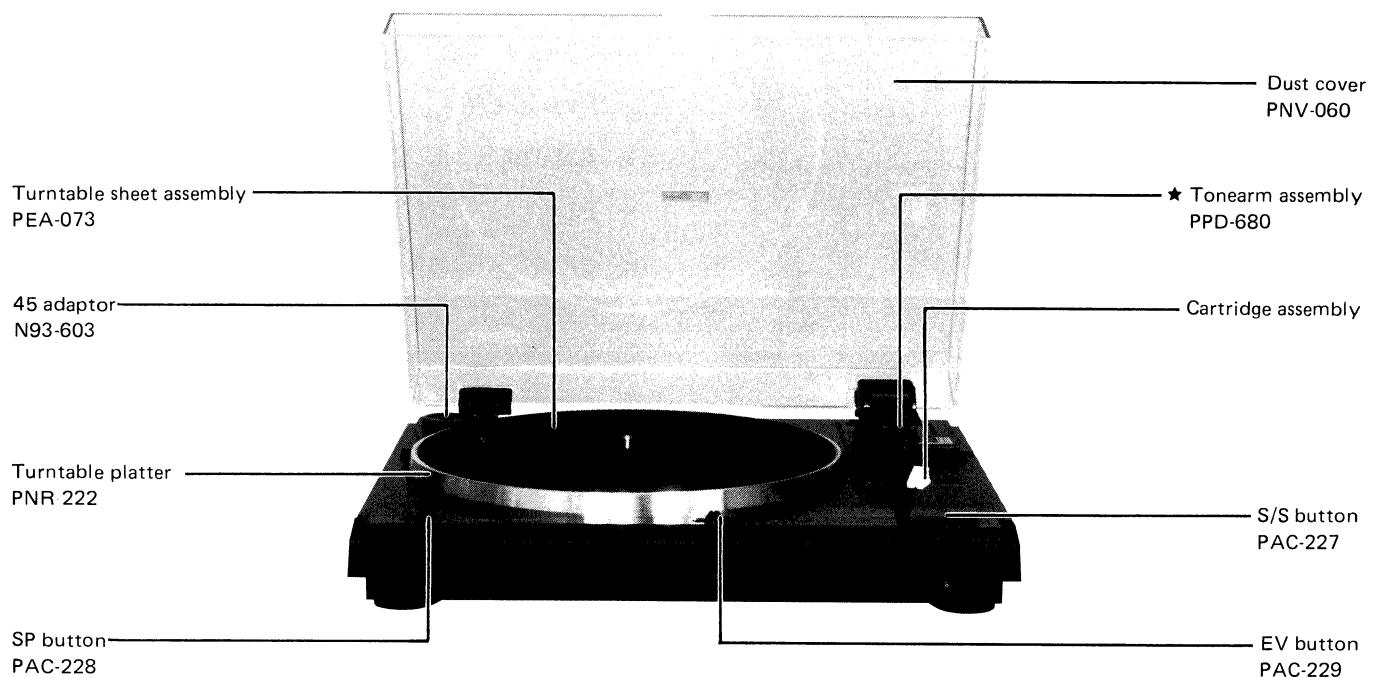
### ⑫ DUST COVER

### 3. PARTS LOCATION

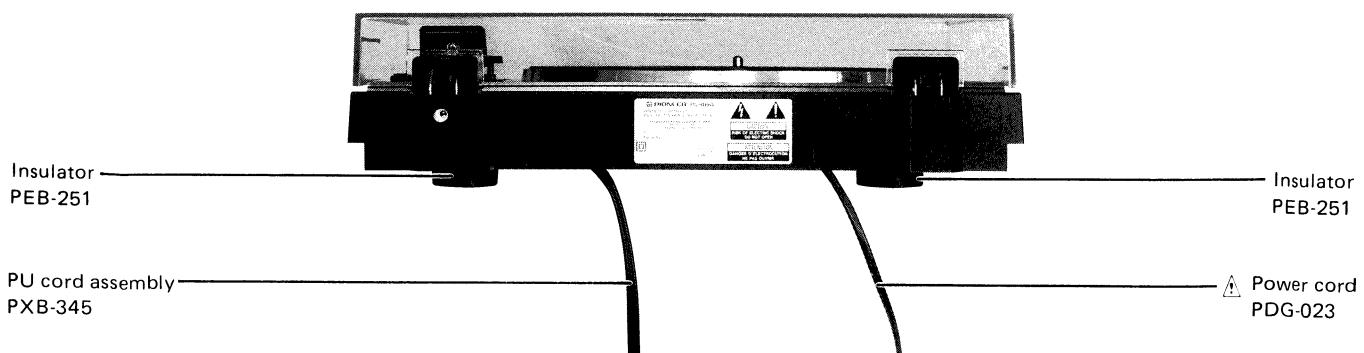
**NOTES:**

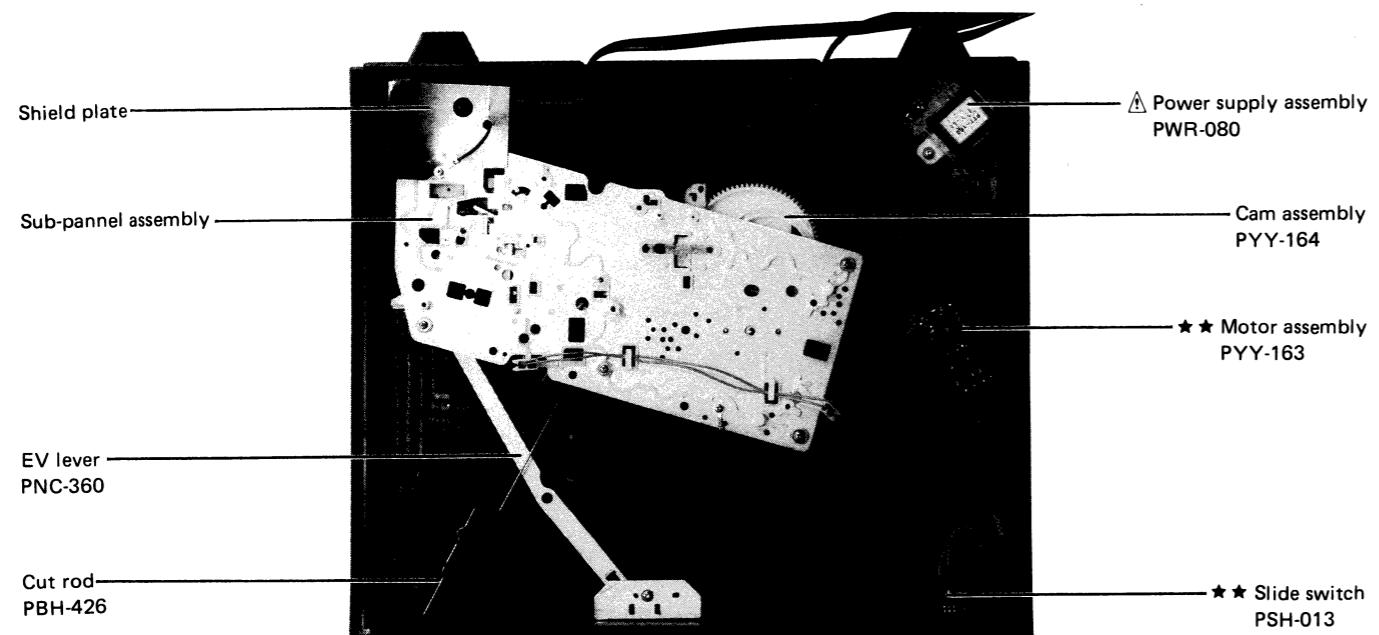
- The  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.  
**★★ GENERALLY MOVES FASTER THAN ★**  
 This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

#### Front View



#### Rear View



**Bottom View**

## 4. DISASSEMBLY

### • Mechanism Assembly and Motor

1. Turn on the turntable and free the mechanism.
2. Fasten the tone arm to the arm rest.
3. Remove the rubber sheet and turntable.
4. Close the player hood and turn the player upside down and place it on a soft cloth so that the player hood is not damaged.
5. Remove the eleven screws ①, and remove the under base.
6. Remove five screws ② and two screw ③.
7. Disconnect connectors Ⓐ .
- The mechanism assembly can be removed from the panel.
8. Remove the two screws ④, and remove the motor.

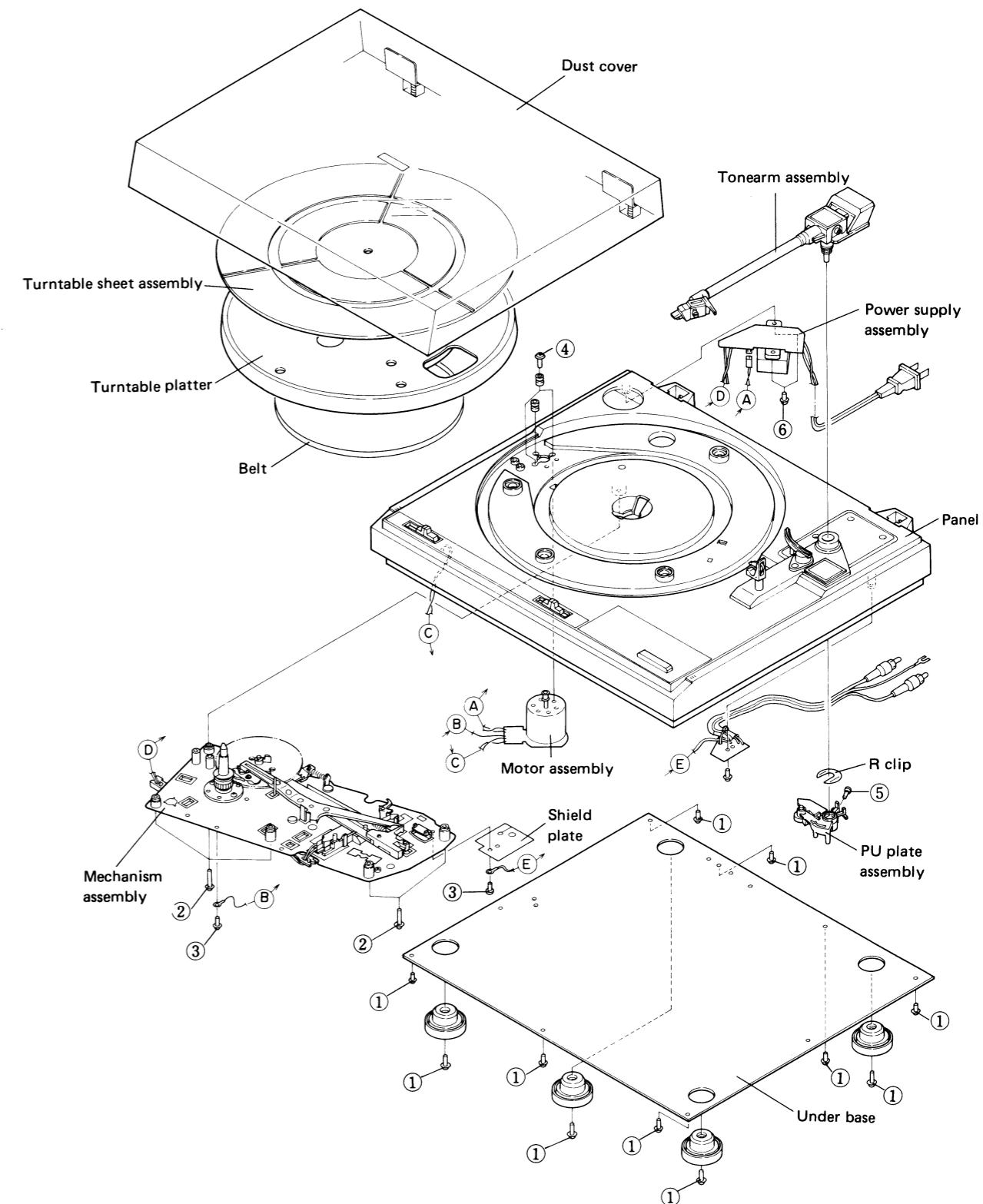
See pages 20 to 21 for the parts installation and assembly precautions.

### • Tone Arm

1. Remove the mechanism assembly from the panel.
2. Using a soldering iron, disconnect the PU lead wires (arm lead wires) from the PU P.C. board.
3. Remove the PU plate assembly AS spring.
4. Remove the one screw ⑤, and remove the PU plate assembly from the tone arm.
5. Remove the R clip.
6. Turn the player onto its side, remove the arm reset clamp, and remove the tone arm from the panel.

### • Power Supply Assembly

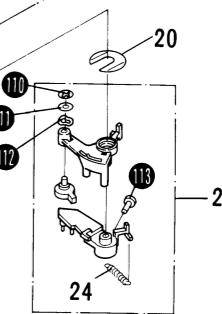
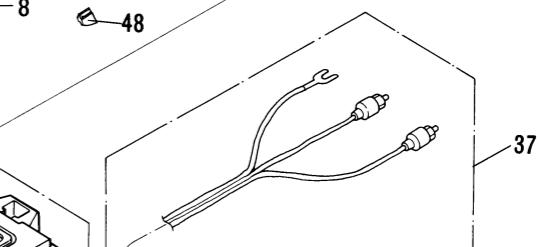
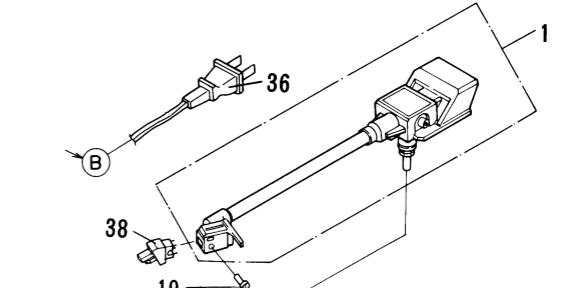
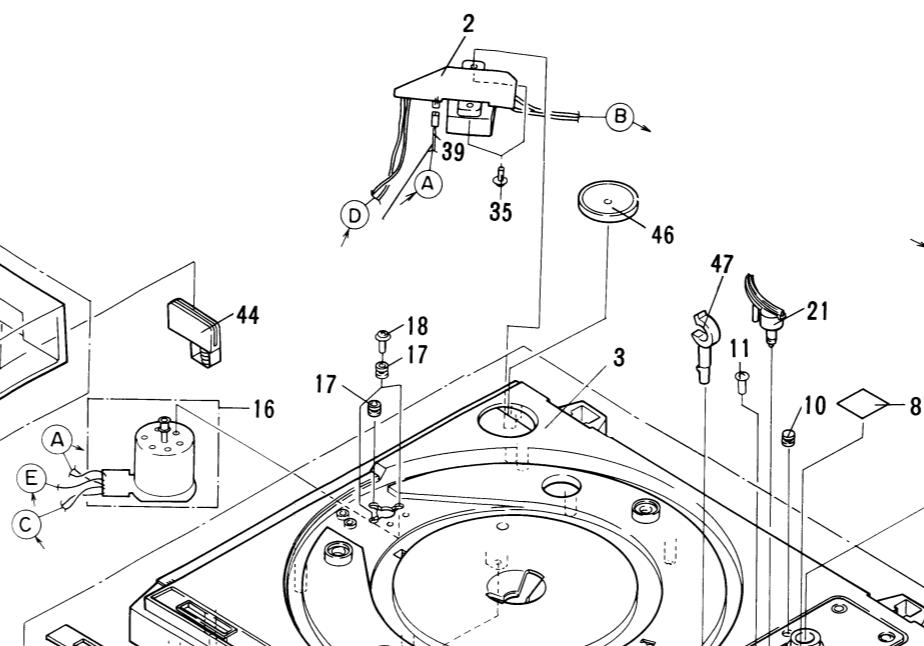
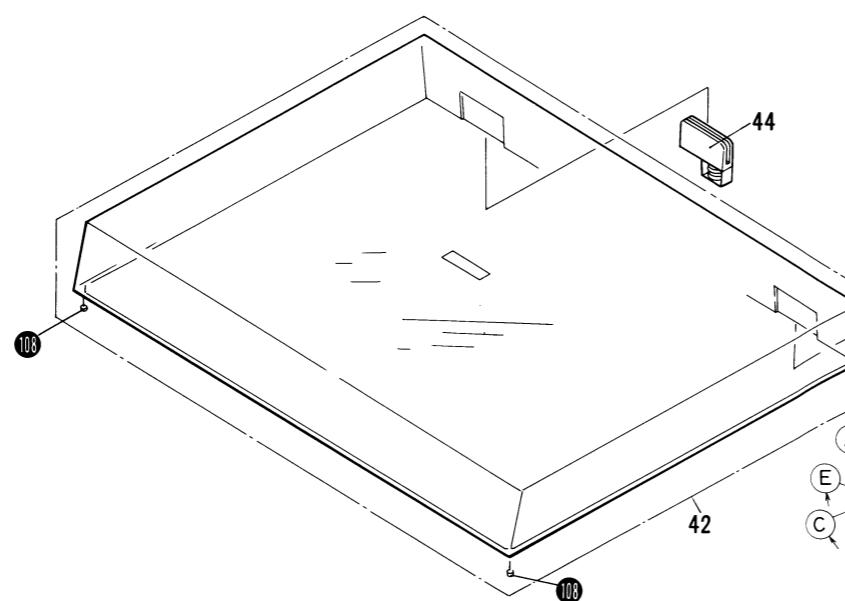
Remove the two screws ⑥ .



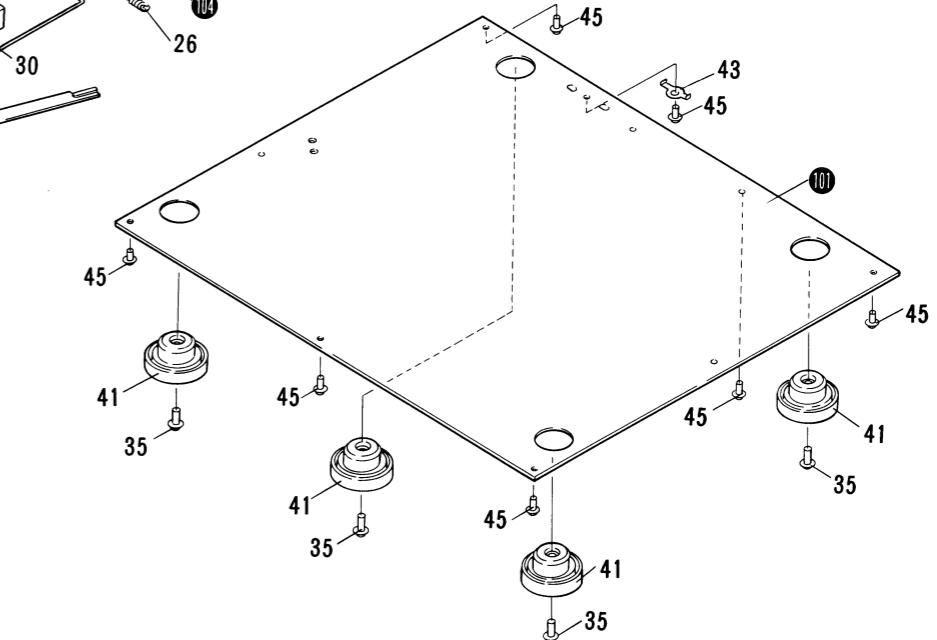
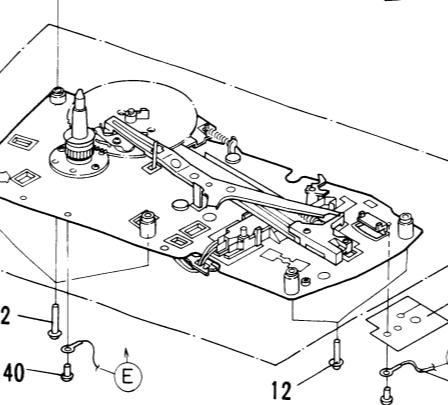
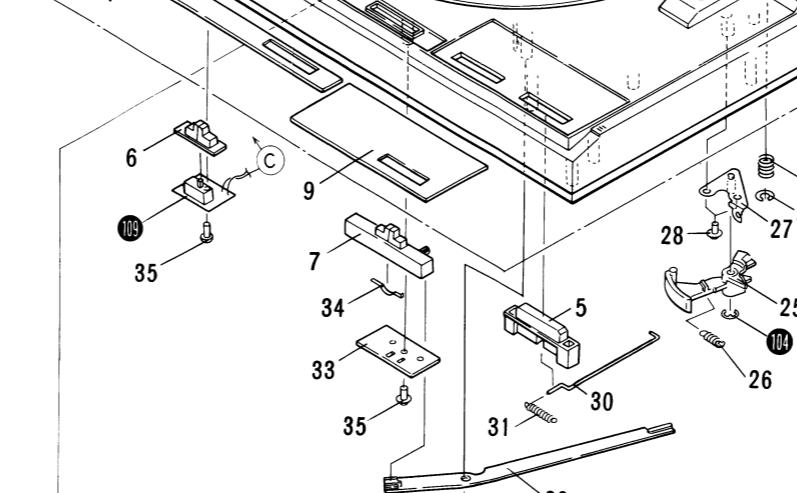
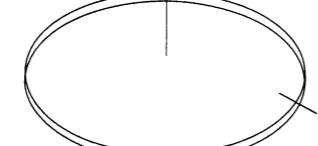
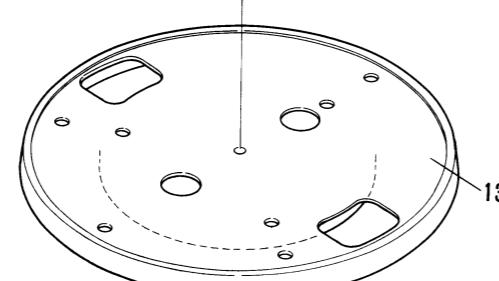
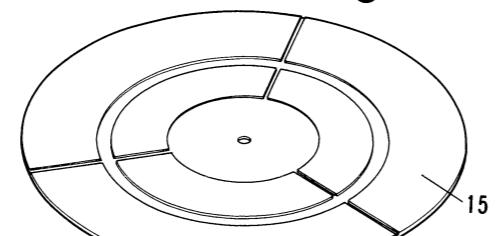
## 5. EXPLODED VIEWS

## 5.1 EXTERIOR

A



B



C

A

B

C

D

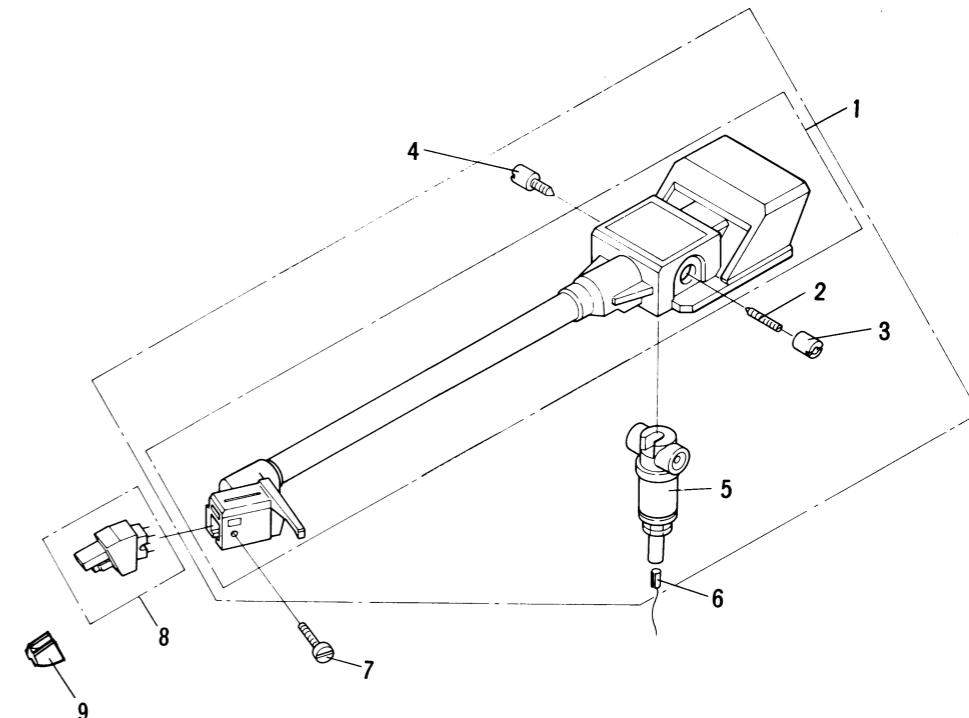
D

**Parts List****NOTES:**

- Parts without part number cannot be supplied.
- The mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks and .

**★★ GENERALLY MOVES FASTER THAN ★**  
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

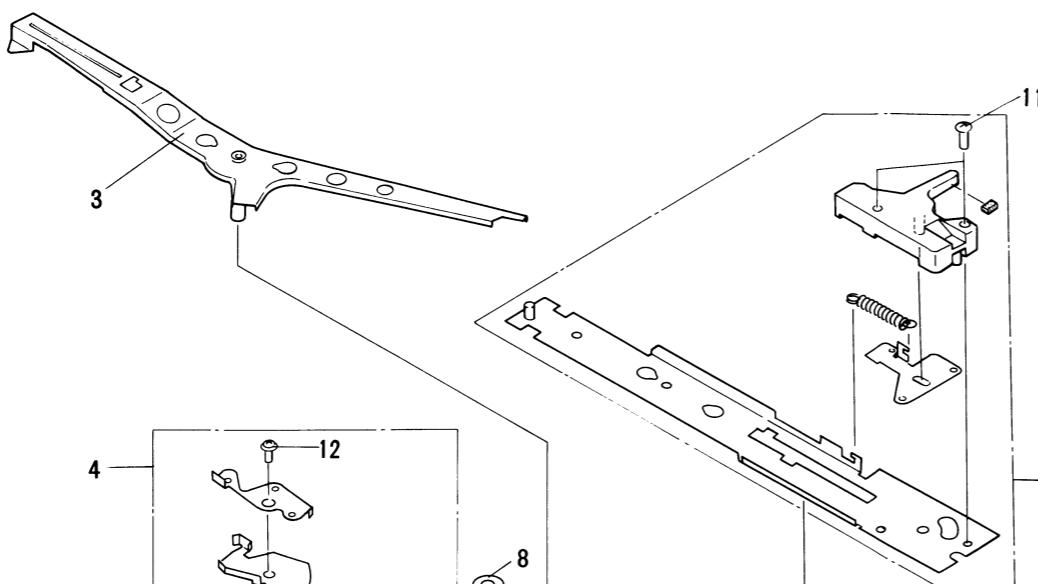
| Mark | No. | Part No.             | Description              | Mark | No. | Part No.     | Description                |
|------|-----|----------------------|--------------------------|------|-----|--------------|----------------------------|
|      | 1.  | PPD-680              | Tonearm assembly         |      | 30. | PBH-426      | Cut rod                    |
|      | 2.  | PWR-080              | Power supply assembly    |      | 31. | PBH-339      | Power lever spring         |
|      | 3.  | PNY-338              | Panel                    |      | 32. | PNC-360      | E-V lever                  |
|      | 4.  | PAM-146              | Screen (B)               |      | 33. | PNC-361      | E-V angle                  |
|      | 5.  | PAC-227              | S/S button               |      | 34. | PNC-362      | Button spring              |
|      | 6.  | PAC-228              | SP button                |      | 35. | IPC30P100FMC | Screw (3 x 10)             |
|      | 7.  | PAC-229              | E-V button               |      | 36. | PDG-023      | Power cord                 |
|      | 8.  | PAN-066              | AS board                 |      | 37. | PXB-345      | PU cord assembly           |
|      | 9.  | PAM-152              | BR screen                |      | 38. | PXV-961      | Cartridge (without stylus) |
|      | 10. | PEB-114              | Rubber bush              |      | 39. | PDE-254      | Connector assembly         |
|      | 11. | BPZ26P120FZK         | Screw (2.6 x 12)         |      | 40. | PSZ30P060FMC | Screw                      |
|      | 12. | IPC30P290FMC         | Screw (3 x 29)           |      | 41. | PEB-251      | Insulator                  |
|      | 13. | PNR-222              | Turntable platter        |      | 42. | PNV-060      | Dust cover                 |
|      | 14. | PEB-296<br>(PEB-224) | Belt                     |      | 43. | PNC-363      | Fixer                      |
|      | 15. | PEA-073              | Turntable sheet assembly |      | 44. | PXB-378      | Hinge assembly             |
|      | 16. | PYY-163              | Motor assembly           |      | 45. | IPC30P100FMC | Screw                      |
|      | 17. | PEB-172              | Rubber                   |      | 46. | N93-603      | 45 adaptor                 |
|      | 18. | PBA-112              | Motor mounting screw     |      | 47. | PNY-345      | Arm rest                   |
|      | 19. | PBA-170              | Cartridge mounting screw |      | 48. | PNX-981      | Stylus cover               |
|      | 20. | PBK-059              | R clip                   | 101. |     |              | Under base                 |
|      | 21. | PXB-374              | Elevation sheet assembly | 102. |     |              | .....                      |
|      | 22. | PBH-293              | E-V spring               | 103. |     |              | Sub-panel assembly         |
|      | 23. | PBF-020              | Polyslider washer        | 104. |     |              | Washer                     |
|      | 24. | PBH-425              | AS spring                | 105. |     |              | Ground lead unit           |
|      | 25. | PNY-335              | Elevation cam            | 106. |     |              | Lead cord assembly         |
|      | 26. | PBH-238              | Elevation cam spring     | 107. |     |              | Shield plate               |
|      | 27. | PXT-462              | E-V spring unit (B)      | 108. |     |              | Rubber foot                |
|      | 28. | PPZ30P080FMC         | Screw (3 x 8)            | 109. |     |              | Switch board assembly      |
|      | 29. | PXB-479              | PU plate assembly (B)    | 110. |     |              | Washer                     |
|      |     |                      |                          | 111. |     |              | Washer                     |
|      |     |                      |                          | 112. |     |              | PU spring washer           |
|      |     |                      |                          | 113. |     |              | Screw                      |

**5.2 TONE ARM ASSEMBLY****Parts List of Tonearm Assembly (PPD-680)**

| Mark | No.     | Part No.                   | Description |
|------|---------|----------------------------|-------------|
| 1.   | PXB-625 | Pipe holder assembly       |             |
| 2.   | PLA-580 | Pivot                      |             |
| 3.   | PLB-718 | Pivot lock nut             |             |
| 4.   | PLB-727 | Pivot screw                |             |
| 5.   | PXB-624 | Inside holder assembly     |             |
| 6.   | PDF-514 | Ground lug unit            |             |
| 7.   | ABA-170 | Screw                      |             |
| 8.   | PXV-961 | Cartridge (without stylus) |             |
| 9.   | PNX-981 | Stylus cover               |             |

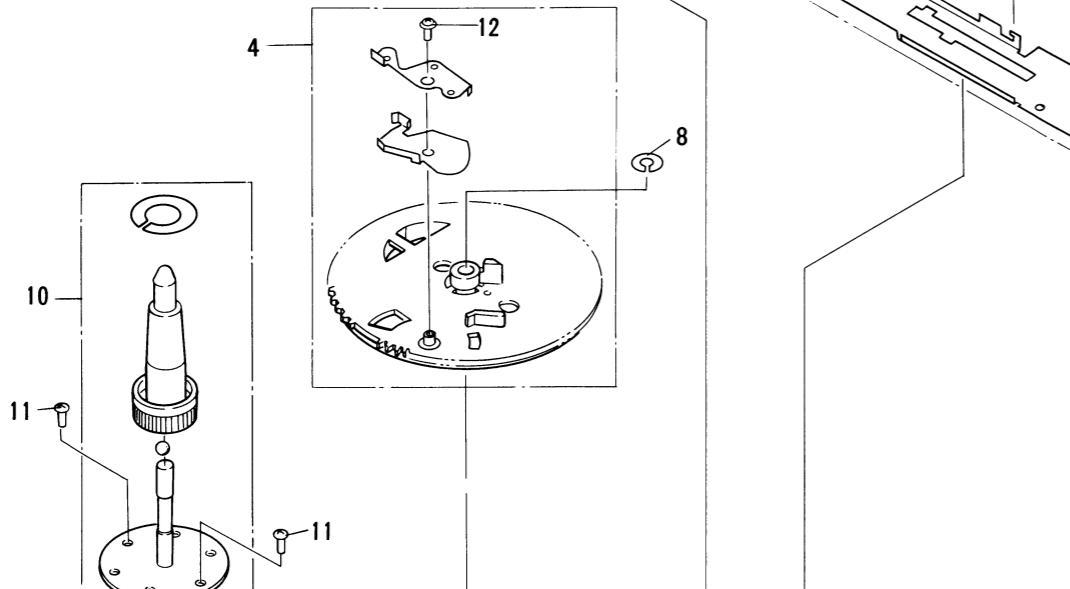
## 5.3 MECHANISM SECTION (SUB-PANEL ASSEMBLY)

A



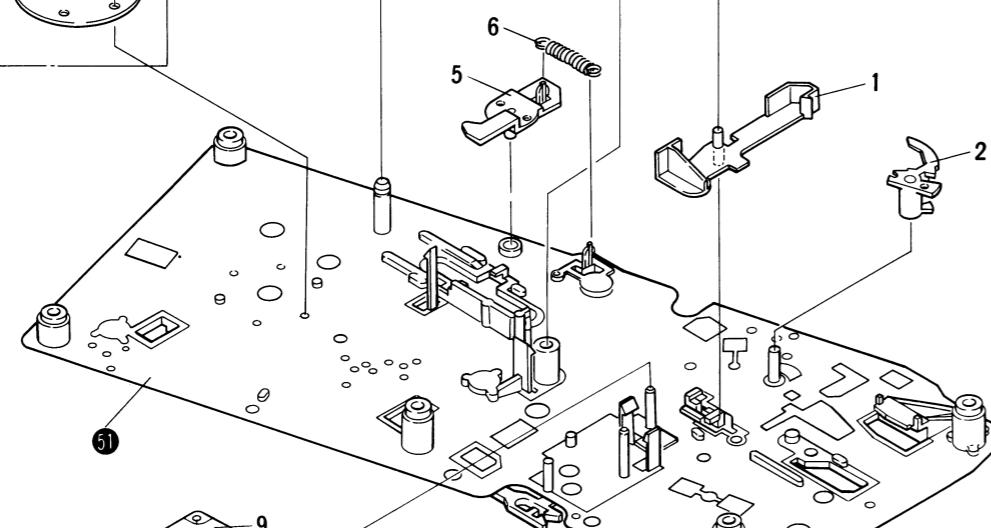
A

B



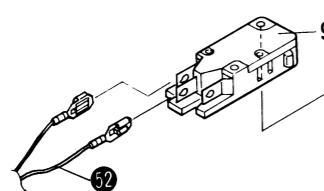
B

C



C

D



D

## NOTES:

- Parts without part number cannot be supplied.
- The mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
- ★★ GENERALLY MOVES FASTER THAN ★  
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

## Parts List of Mechanism Section (Sup-panel Assembly)

| Mark | No. | Part No.     | Description          |
|------|-----|--------------|----------------------|
| ★★   | 1.  | PNX-030      | Switch lever         |
| ★★   | 2.  | PNY-141      | Switch locker        |
|      | 3.  | PXT-446      | Detector lever unit  |
|      | 4.  | PYY-164      | Cam assembly         |
|      | 5.  | PNY-139      | Lock plate           |
|      | 6.  | PBH-392      | Lock plate spring    |
|      | 7.  | PXB-232      | Drive board assembly |
|      | 8.  | PBF-018      | Polyslider washer    |
| ★★   | 9.  | PSF-023      | Microswitch (POWER)  |
|      | 10. | PXB-443      | Shaft assembly       |
|      | 11. | PDZ30P080FMC | Screw                |
|      | 12. | PBA-126      | Screw (2.6 x 8)      |
|      | 51. | PXT-112      | Sub panel unit       |
|      | 52. |              | Lead wire assembly   |

## 6. ELECTRICAL PARTS LIST

### NOTES:

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

|      |                  |                           |
|------|------------------|---------------------------|
| 560Ω | $56 \times 10^1$ | 561 . . . . . RD%PS 561 J |
| 47kΩ | $47 \times 10^3$ | 473 . . . . . RD%PS 473 J |
| 0.5Ω | 0R5 . . . . .    | RN2H 0R5 K                |
| 1Ω   | 010 . . . . .    | RS1P 010 K                |

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

|        |                   |                           |
|--------|-------------------|---------------------------|
| 5.62kΩ | $562 \times 10^1$ | 5621 . . . . RN%SR 5621 F |
|--------|-------------------|---------------------------|

- The mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.

★★ GENERALLY MOVES FASTER THAN ★

This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

### Miscellaneous Parts

#### P.C. BOARD ASSEMBLY

| Mark | Symbol & Description  | Part No.  |
|------|-----------------------|-----------|
|      | Power supply assembly | PWR-080   |
|      | Switch board assembly | NO supply |

#### OTHERS

| Mark  | Symbol & Description | Part No. |
|-------|----------------------|----------|
| ★★    | Motor assembly       | PYY-163  |
| ★★ S1 | Microswitch (POWER)  | PSF-023  |
|       | Power cord           | PDG-023  |
|       | PU cord assembly     | PXB-345  |

#### Power Supply Assembly (PWR-080)

| Mark | Symbol & Description          | Part No.    |
|------|-------------------------------|-------------|
| ★    | D1                            | DSA1A1      |
|      | ★ Power transformer (AC 120V) | PTT-167     |
|      | C2                            | CEA221M25L  |
|      | C1, C3                        | CKDYF103Z50 |

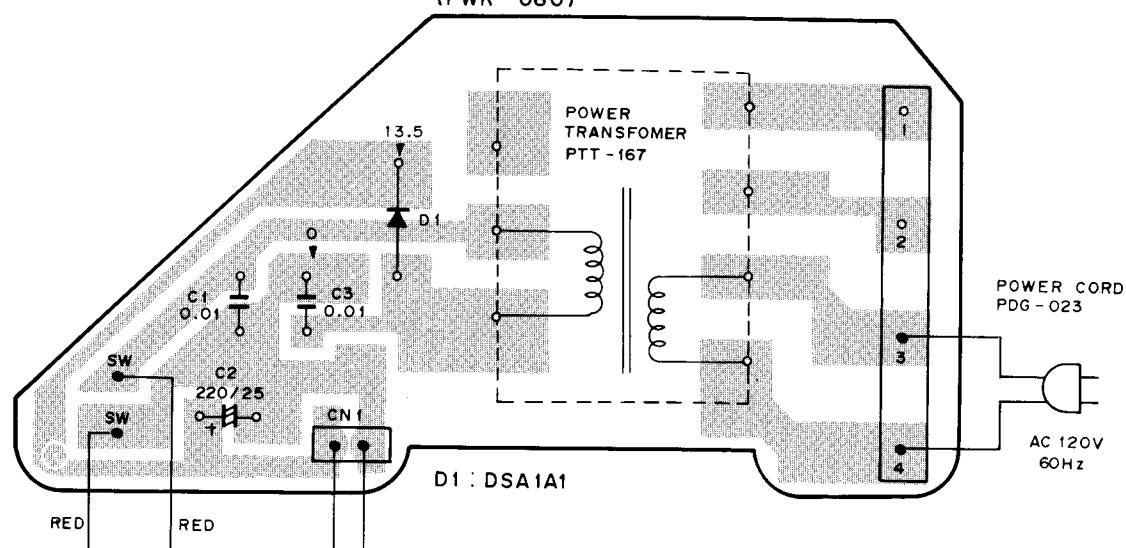
#### Switch Board Assembly

| Mark  | Symbol & Description | Part No. |
|-------|----------------------|----------|
| ★★ S2 | Push switch          | PSH-013  |

## 7. P.C. BOARDS CONNECTION DIAGRAM

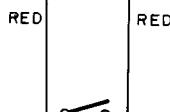
A

POWER SUPPLY ASSEMBLY  
(PWR - 080)



B

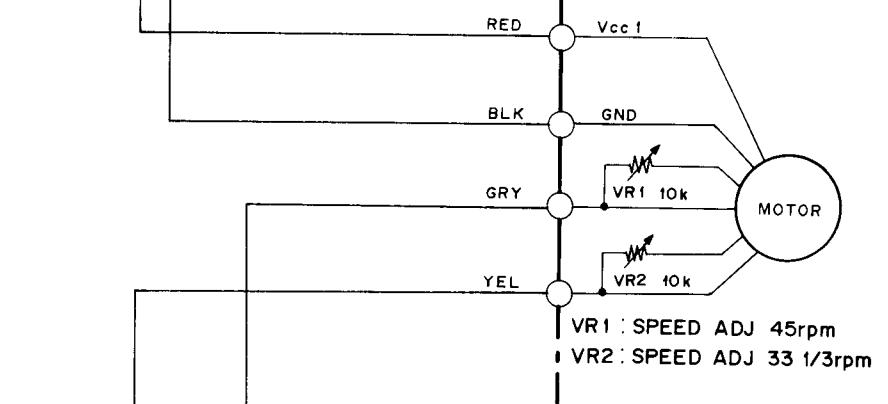
D1 : DSA1A1



S1  
MICRO SWITCH  
PSF - 023

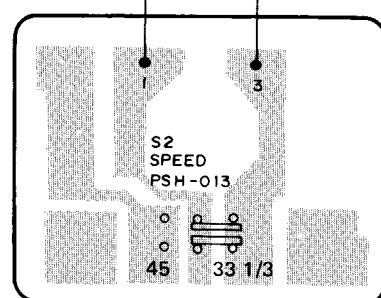
C

MOTOR ASSEMBLY  
(PYY - 163)



D

SWITCH  
BOARD ASSEMBLY



1

2

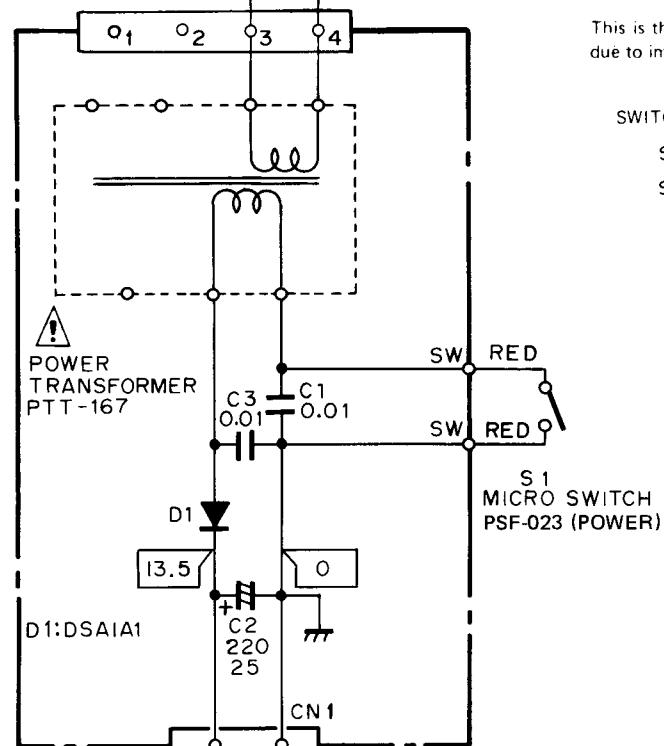
3

## 8. SCHEMATIC DIAGRAM

A



### POWER SUPPLY ASSEMBLY (PWR-080)



B

### 1. RESISTORS:

Indicated in  $\Omega$ ,  $\frac{1}{2}W$ ,  $\frac{1}{4}W$ ,  $\pm 5\%$  tolerance unless otherwise noted k :  $k\Omega$ , M :  $M\Omega$ , (F) :  $\pm 1\%$ , (G) :  $\pm 2\%$ , (K) :  $\pm 10\%$ , (M) :  $\pm 20\%$  tolerance

### 2. CAPACITORS:

Indicated in capacity ( $\mu F$ )/voltage (V) unless otherwise noted p :  $pF$   
Indication without voltage is 50V except electrolytic capacitor.

### 3. VOLTAGE

$\square$  : DC voltage (V) at no input signal

### 4. OTHERS:

→ : Signal route.

◎ : Adjusting point.

The mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

### SWITCHES:

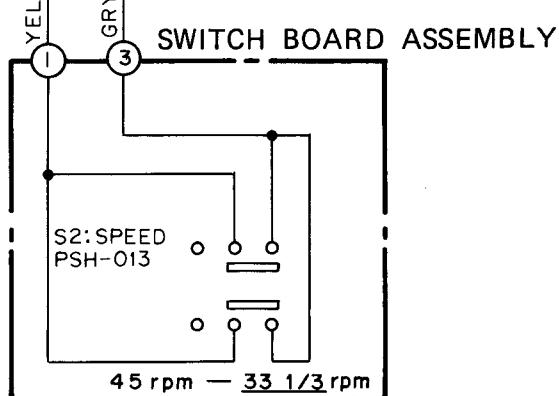
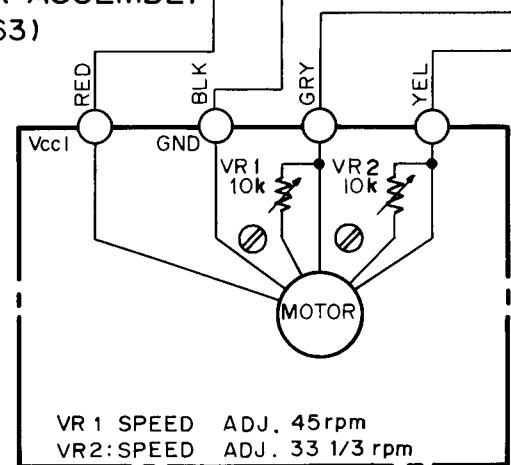
S1 : POWER ON - OFF

S2 : SPEED 33 1/3 rpm - 45 rpm

The underlined indicates the switch position.

C

### MOTOR ASSEMBLY (PYY-163)



D

1

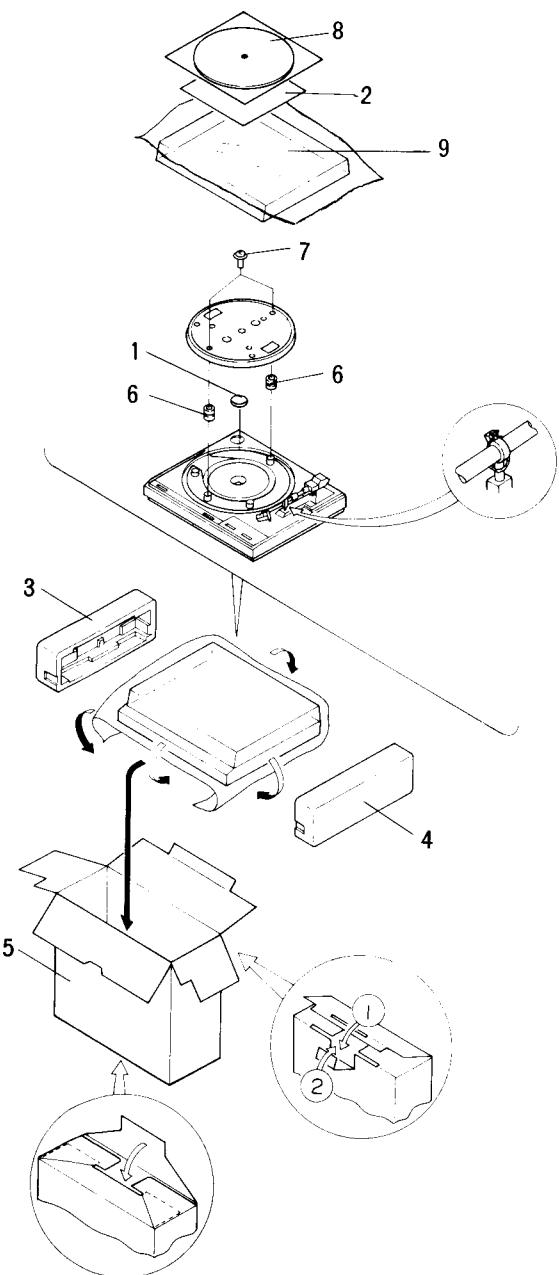
2

3

## 9. PACKING

### Parts List of Packing

| Mark | No.     | Part No.                            | Description |
|------|---------|-------------------------------------|-------------|
| 1.   | N93-603 | 45 adaptor                          |             |
| 2.   | PRB-282 | Operating instructions<br>(English) |             |
| 3.   | PHA-175 | Protector (L)                       |             |
| 4.   | PHA-176 | Protector (R)                       |             |
| 5.   | PHH-237 | Packing case                        |             |
| 6.   | PNY-198 | Turntable packing                   |             |
| 7.   | PBA-178 | Screw                               |             |
| 8.   | PEA-073 | Turntable sheet assembly            |             |
| 9.   | PNV-060 | Dust cover                          |             |



## 10. ADJUSTMENTS

### 10.1 AUTO-RETURN ADJUSTMENT

#### • Auto-Return Position Adjustment

When auto-return occurs too early or too late, make the following adjustments.

1. Check the stylus landing position. If the stylus does not land at the correct position, adjust the landing position.
2. Set the arm elevation switch to UP and turn the auto-return adjustment screw fully counter-clockwise.
3. Move the tone arm as far as it will go toward the inside.
4. When the auto-return adjustment screws is turned slowly clockwise, the tone arm will begin to move toward the inside.
5. Stop turning the adjustment screw at the point at which there is a space of 32 mm between the cartridge stylus and the center shaft. (Fig. 10-1)
6. After adjustment, check is auto-return is performed correctly and that the stylus landing position is correct.

### 10.2 ARM-ELEVATION ADJUSTMENT

#### • Arm Elevation Height Adjustment

1. Turn the arm elevation lever up to raise the tone arm.
2. Adjust the screw so that stylus is 23 mm above the panel. When the adjustment screw is turned counterclockwise, the stylus lowers.

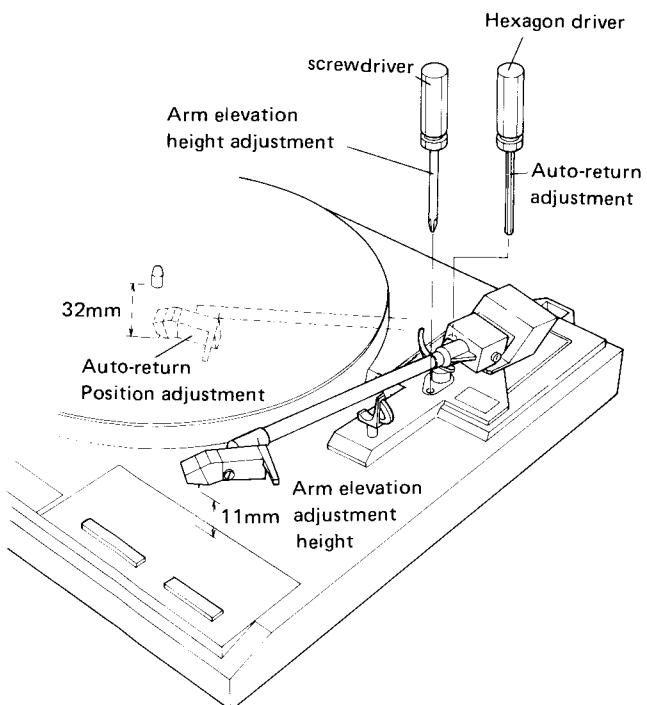


Fig. 10-1 Arm elevation height adjustment and auto-return adjustment

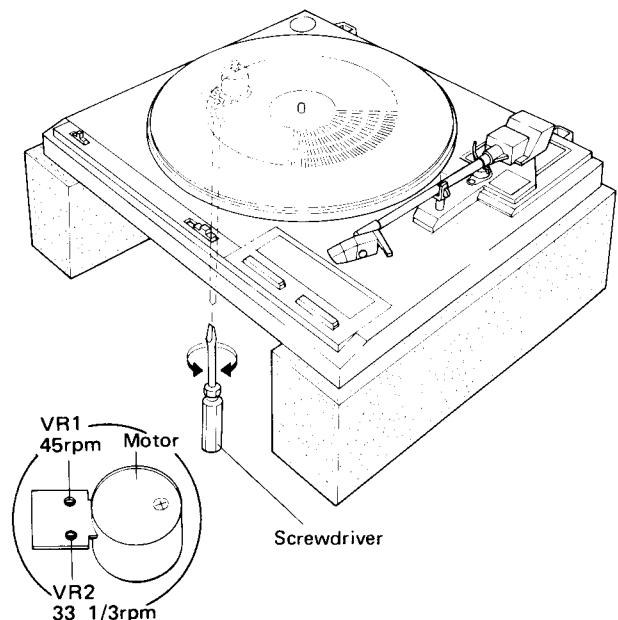


Fig. 10-2 Motor adjustment

### 10.3 MOTOR ADJUSTMENTS

Place the record player on blocks as shown in Fig. 10-2 and adjust the motor from the under base.

1. Turn the arm elevation lever up to raise the arm.
2. Place a strobo sheet on the turntable, move the arm to the turntable side, and rotate the turntable.
3. Adjust semifixed resistors VR1 and VR2 of the motor ass'y so the strobo of the strobo sheet appears to the static.
4. First adjust VR2 for 33 1/3 rpm and then adjust VR1 for 45 rpm.

## 10. RÉGLAGE

### 10.1 REGLAGE DU RETOUR AUTOMATIQUE

- Réglage de la Position du Retour Automatique

Exécuter les réglages suivants au cas où le retour automatique s'effectue trop tôt ou trop tard.

1. Vérifier la position de descente de la pointe de lecture. Si celle-ci ne se pose pas sur la position correcte, régler la position de descente.
2. Placer l'interrupteur d'élévation du bras acoustique sur la position "UP" (vers le haut), et tourner la vis de réglage de retour automatique complètement dans le sens contraire des aiguilles d'une montre.
3. Déplacer le bras acoustique vers l'intérieur autant que possible.
4. Le bras acoustique se déplacera vers l'intérieur lorsque la vis de réglage du retour automatique est tournée lentement dans le sens des aiguilles d'une montre.
5. Interrompre la rotation de la vis de réglage sur le point où on obtient un écartement de 32 mm entre la points de la tête de lecture et l'axe central. (Fig.10-1).
6. Après le réglage, vérifier si le retour automatique s'effectue correctement et si la position de descente de la pointe de lecture est appropriée.

### 10.2 REGLAGE DE L'ELEVATION DU BRAS ACOUSTIQUE

- Réglage de la Hauteur D'élévation du bras Acoustique

1. Tourner le levier d'élévation du bras acoustique vers le haut pour soulever le bras acoustique.
2. Régler la vis de telle manière que la hauteur de la pointe de lecture soit de 23 mm au-dessus du panneau. La pointe de lecture s'abaisse lorsque l'on tourne la vis de réglage dans le sens contraire des aiguilles d'une montre.

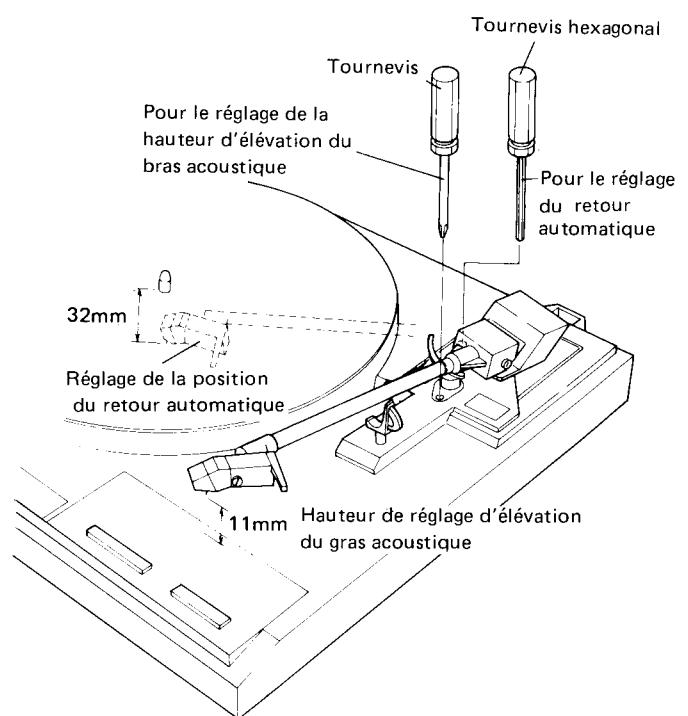


Fig. 10-1 Réglage de la hauteur d'élévation du bras acoustique et du retour automatique

### 10.3 REGLAGE DU MOTEUR

Placer la platine de lecture de disque sur des blocs comme indiqué par la figure 10-2, et régler le moteur à partir d'en dessous de la base.

1. Tourner le levier d'élévation du bras acoustique vers le haut pour soulever le bras acoustique.
2. Placer une feuille stroboscopique sur le plateau, déplacer le bras acoustique vers le côté de la platine de lecture de disque, et tourner le plateau.
3. Régler les résistances semi-fixes VR1 et VR2 de l'ensemble du moteur de telle manière que le stroboscope de la feuille stroboscopique semble être fixe.
4. Régler en premier lieu la résistance VR2 pour 33 1/3 tours/minute, puis régler la résistance VR1 pour 45 tours/minute.

## 10. AJUSTE

### 10.1 AJUSTE DE REGRESO AUTOMATICO

- Ajuste de la Posición de Regreso Automático

Ejecutar los siguientes ajustes en caso de que el regreso automático ocurra muy temprano o muy tarde:

1. Verificar la posición de descanso de la aguja. Si la aguja no descansa en la posición correcta, ajustar la posición de descanso.
2. Colocar el interruptor de elevación del brazo en la posición "UP" (hacia arriba), y girar el tornillo de ajuste de regreso automático completamente en el sentido contrario al de las agujas del reloj.
3. Desplazar el brazo sonoro hacia dentro lo más lejos posible.
4. El brazo sonoro se desplazará hacia dentro cuando el tornillo de ajuste de regreso automático es girado despacio en el sentido de las agujas del reloj.
5. Interrumpir la rotación del tornillo de ajuste al punto en el cual hay un intervalo de 32 mm entre la aguja de cartucho y el eje central. (Fig. 10-1)
6. Después del ajuste, verificar si el regreso automático se ejecuta correctamente y si la posición de descanso de la aguja es apropiada.

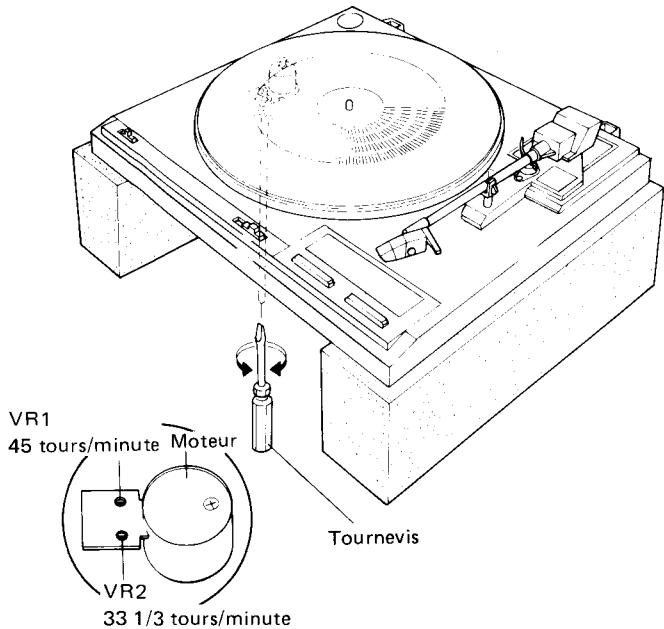


Fig. 10-2 Réglage du moteur

### 10.2 AJUSTE DE LA ELEVACION DEL BRAZO SONORO

- Ajuste de la Altura de Elevación del Brazo Sonoro

1. Girar la palanca de elevación del brazo sonoro hacia arriba para levantar el brazo sonoro.
2. Ajustar el tornillo de modo que la altura de la aguja sea de 23 mm sobre el panel. La aguja se baje cuando el tornillo de ajuste es girado en el sentido contrario al de las agujas del reloj.

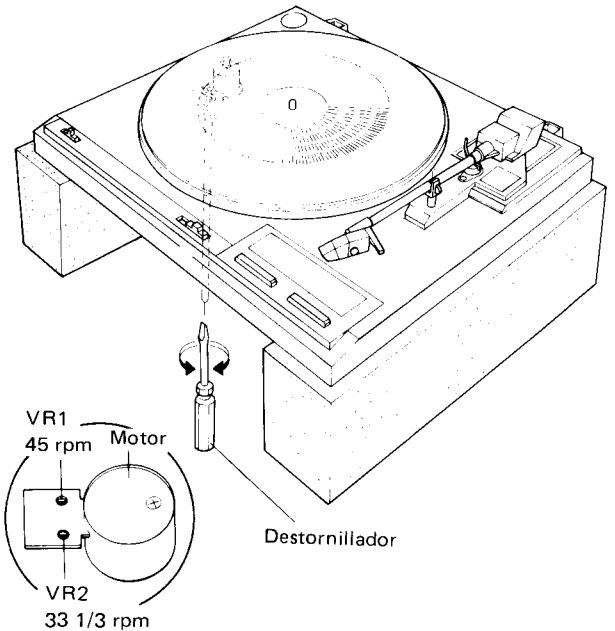
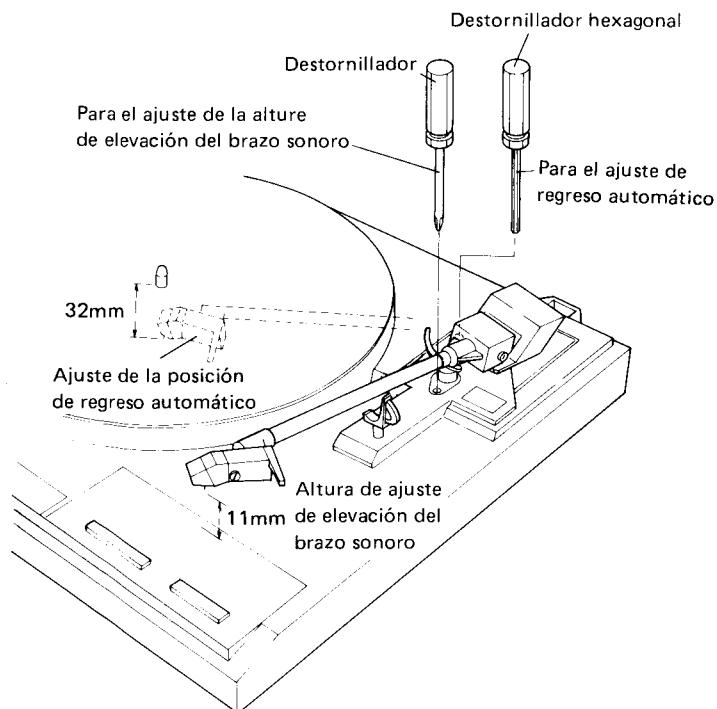


Fig. 10-2 Ajuste del motor

Fig. 10-1 Ajustes de la altura de elevación del brazo sonoro y de regreso automático

### 10.3 AJUSTES DEL MOTOR

Colocar el tocadiscos sobre dos bloques como se ilustra en la figura 10-2, y ajustar el motor desde la base inferior.

1. Girar la palanca de elevación del brazo sonoro hacia arriba para levantar el brazo.
2. Colocar una hoja de estroboscopia sobre el plato, desplazar el brazo sonoro hacia el lado del tocadiscos, y girar el plato.
3. Ajustar las resistencias semifijas VR1 y VR2 del conjunto del motor de modo que el strobo de la hoja de estroboscopia aparezca fijo.
4. Ajustar en primer lugar la resistencia VR2 para 33 1/3 rpm, luego ajustar la resistencia VR1 para 45 rpm.

# 11. PRECAUTIONS FOR REASSEMBLY

Follow these directions and precautions when reassembling a unit after completing repairs. Be sure to lubricate as required, make no mistakes when attaching parts, and avoid all other careless mistakes that may be the cause of trouble later on.

## 11.1 AREAS THAT REQUIRE LUBRICATION

### NOTE:

*Types of lubricants and areas where they are used are listed in table 1.*

Table 1

| Type of Oil        | Areas used      |
|--------------------|-----------------|
| Silicon Oil #50000 | raising shaft   |
| GYA-008            | all other areas |

Lubrication points are specified for oils other than GYA-008. Never use a different type of oil.

- **Cam Section**

Apply grease to the heart-shaped grooved section (rear side of the cam) and lock plate sliding section in order to minimize wear on the sliding section and the burden on the mechanism.

- **Driving Plate Assembly**

Decrease the burden on the mechanism and the wear on the sliding section.

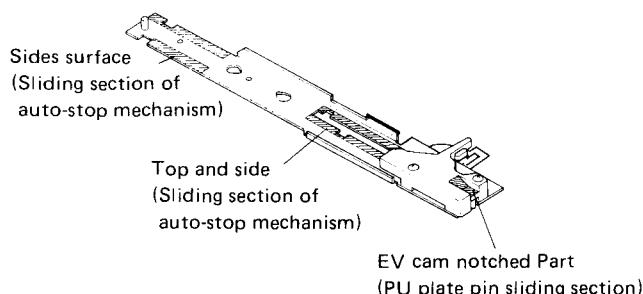


Fig. 11-1 Driving panel assembly section Switch Locker Section

- **Switch Locker Section**

Apply grease to the switch locker (opening) and sub-panel base sliding section to decrease the burden on the mechanism.

When applying grease to the opening (shaft hole), do not apply any grease 2 ~ 3mm from the bottom surface. If grease is applied 2~3mm within the bottom surface, it may come out the bottom and go between the switch lever and sub-panel base causing the switch lever to operate ineffectively.

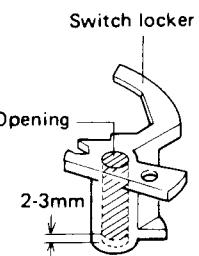


Fig. 11-2 Switch locker section

- **EV Sheet Section**

Apply oil to the raising shaft and sliding section of the bearing to assure stability in the elevation lowering speed.

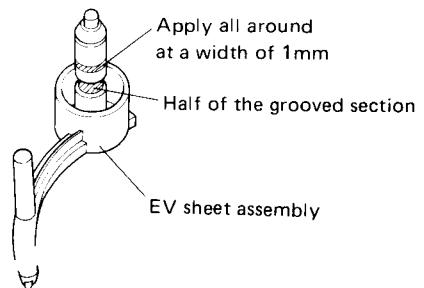


Fig. 11-3 EV sheet section

- **EV Lever Section**

Coat the EV lever shaft section with grease so the EV lever operates smoothly.

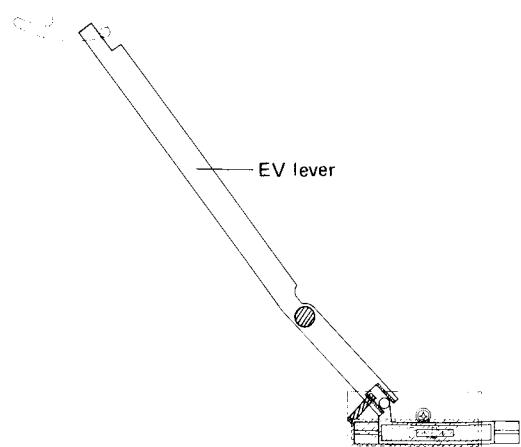


Fig. 11-4 EV lever section

### • Cam Assembly Attachment

The cam assembly is attached by letting the lock plate go in the direction A as shown in Fig. 11-5.

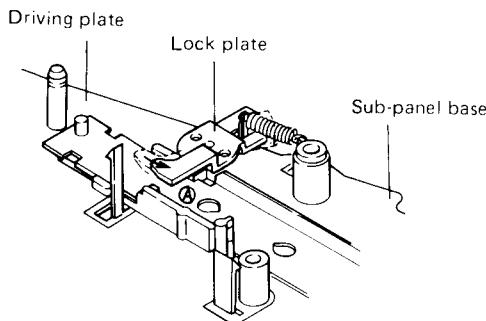


Fig. 11-5 Cam assembly attachment

### • Motor Attachment

When installing the motor, set the cam in the mechanism stop location and verify that the starting plate section B does not protrude beyond surface A of the cam. If the motor is attached with the starting plate section B protruding, the starting plate may be deformed, the motor pinion gear may be scratched, and the return function may be damaged.

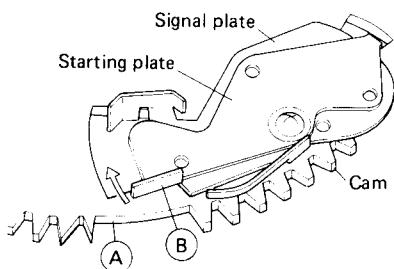


Fig. 11-6 Motor attachment

### • Mechanism Ass'y Attachment

#### 1. PU plate shaft position confirmation

When attaching the arm base section to the mechanism section, put the mechanism section switch locker and switch lever in the locked position and verify that the tonearm is in the arm rest location. Also check that the PU plate shaft is in the position shown in Fig. 11-7.

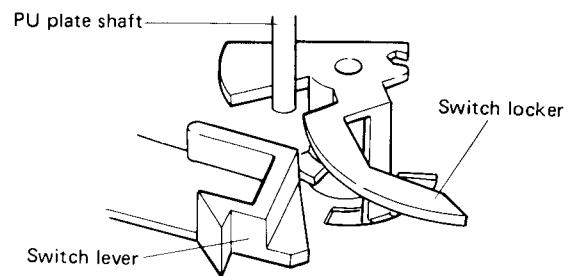


Fig. 11-7 Arm base attachment

#### 2. PU lead wire position confirmation

When attaching the mechanism ass'y to the panel, be careful that the PU lead wire is not pinched at the panel boss as shown in Fig. 11-8.

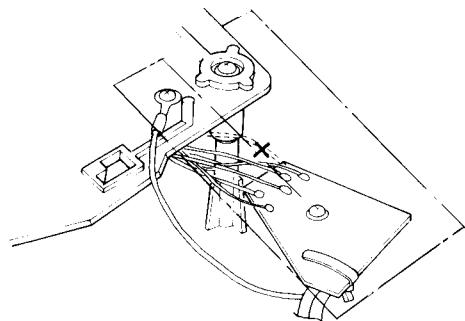


Fig. 11-8 PU lead wire attachment

## 12. FOR KUT, KC, KCT, R, WEM AND WB TYPES

PL-460/KUT, KC, KCT, R, and WEM, WB types are the same as the PL-460/KU type except for following sections.

### Contrast of Miscellaneous Parts (KUT, KC, KCT types)

| Mark | Symbol & Description   | Part No.  |   |   |   |
|------|--|---|---|---|---|
|      |  | KU type   | KUT type  | KC type   | KCT type  |
| ⚠    | Panel (BK)<br>Cartridge (without stylus)<br>PU cord assembly<br>AC power cord<br>Power supply assembly | PNY-338<br>PXV-961<br>PXB-345<br>PDG-023<br>PWR-080 | PNY-337<br>...<br>PXB-345<br>PDG-023<br>PWR-080 | PNY-337<br>PXV-961<br>PXB-333<br>PDG-023<br>PWR-081 | PNY-337<br>...<br>PXB-333<br>PDG-023<br>PWR-081 |
| ⚠ ★★ | Line voltage selector<br>Rubber bush<br>Packing case (BK)<br>Operating instruction (English)<br>Fixer  | ...<br>PEB-114<br>PHH-237<br>PRB-282<br>PNC-363     | ...<br>PEB-114<br>PHH-239<br>PRB-282<br>PNC-363 | ...<br>PHH-240<br>PRB-282<br>...                    | ...<br>PHH-224<br>PRB-282<br>...                |

### Contrast of Miscellaneous Parts (R, WEM, WB types)

| Mark | Symbol & Description   | Part No.  |   |   |   |
|------|--|---|---|---|---|
|      |  | KU type   | R type  | WEM type  | WB type   |
| ⚠    | Panel (BK)<br>Panel (SL)<br>Cartridge (without stylus)<br>PU cord assembly<br>AC power cord                    | PNY-338<br>...<br>PXV-961<br>PXB-345<br>PDG-023 | PNY-374<br>PNY-375<br>PXV-961<br>PXB-333<br>PDG-028 | PNY-337<br>PNY-338<br>PXV-961<br>PXB-333<br>PDG-037 | PNY-337<br>PNY-338<br>PXV-961<br>PXB-333<br>... |
| ⚠    | AC power cord assembly<br>Power supply assembly<br>Line voltage assembly<br>Rubber bush<br>Packing case (BK)   | PWR-080   | ...<br>PWR-083<br>PSB-011<br>PEB-114<br>PHH-237     | ...<br>PWR 082<br>...<br>...<br>PHH-206             | PDF-212<br>PWR-082<br>...<br>...<br>PHH-206     |
| ⚠ ★★ | Packing case (SL)<br>Operating instructions (English)<br>(Spanish)<br>(English/German/French/Italian)<br>Fixer | ...<br>PRB-282<br>...<br>...<br>PNC-363         | ...<br>PRB-282<br>PRC-019<br>...<br>...             | PHH-225<br>PHH-225<br>PHH-225<br>PRE-037<br>...     | PHH-225<br>PHH-225<br>PHH-225<br>...            |

# PL-460/KC, KCT, R, WEM, WB

## Parts list

### FOR KC, KCT types

#### Power supply assembly (PWR-081)

### SEMICONDUCTOR

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★ D1 |                      | DSA1A1   |

### CAPACITORS

| Mark   | Symbol & Description | Part No.    |
|--------|----------------------|-------------|
| C1, C3 |                      | CKDYF103Z50 |
| C2     |                      | CEA221M25L  |

### OTHERS

| Mark | Symbol & Description                | Part No. |
|------|-------------------------------------|----------|
| ▲ ★  | Power transformer<br>(AC 120V only) | PTT-168  |

## FOR R type

### Power supply assembly (PWR-083)

### SEMICONDUCTOR

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★ D1 |                      | DSA1A1   |

### CAPACITORS

| Mark   | Symbol & Description | Part No.    |
|--------|----------------------|-------------|
| C1, C3 |                      | CKDYF103Z50 |
| C2     |                      | CEA221M25L  |

### OTHERS

| Mark | Symbol & Description                  | Part No. |
|------|---------------------------------------|----------|
| ▲ ★  | Power transformer<br>(AC 110V ~ 240V) | PTT-170  |

## FOR WEM, WB types

### Power supply assembly (PWR-082)

### SEMICONDUCTOR

| Mark | Symbol & Description | Part No. |
|------|----------------------|----------|
| ★ D1 |                      | DSA1A1   |

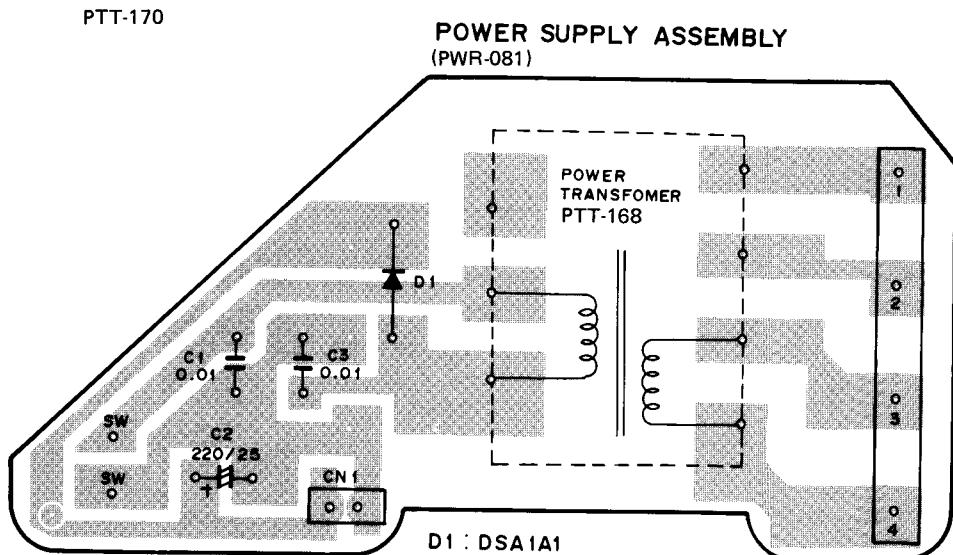
### CAPACITORS

| Mark   | Symbol & Description | Part No.    |
|--------|----------------------|-------------|
| C1, C3 |                      | CKDYF103Z50 |
| C2     |                      | CEA221M25L  |

### OTHERS

| Mark | Symbol & Description                  | Part No. |
|------|---------------------------------------|----------|
| ▲ ★  | Power transformer<br>(AC 220V ~ 240V) | PTT-169  |

## KC, KCT Types P.C. Board Pattern

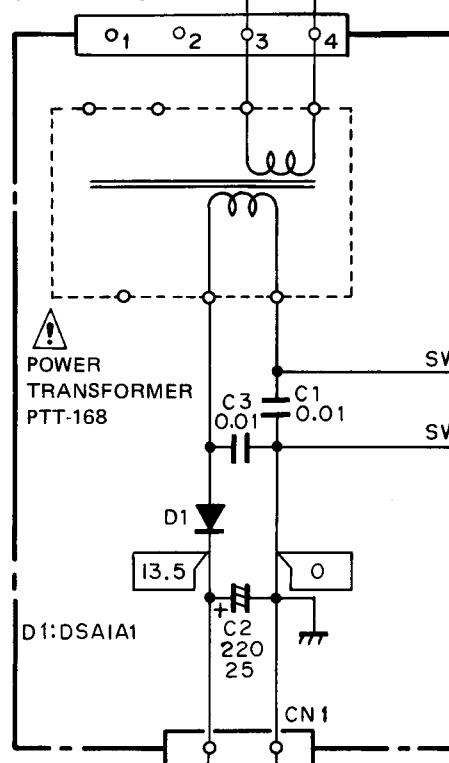
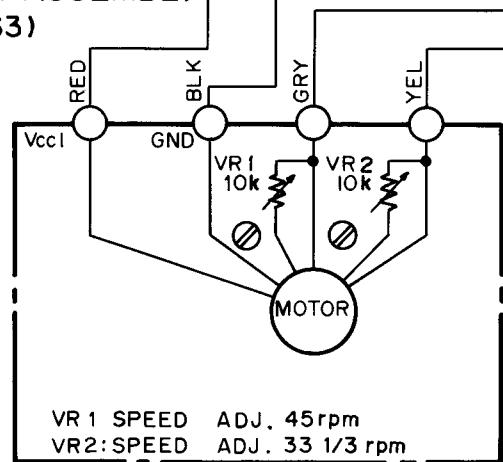


1

2

## Schematic Diagram

A


**POWER SUPPLY ASSEMBLY**  
(PWR-081)

**MOTOR ASSEMBLY**  
(PYY-163)


45 rpm — 33 1/3 rpm

B

## SWITCHES:

S1 : POWER      ON — OFF

S2 : SPEED      33 1/3 rpm — 45 rpm

The underlined indicates the switch position.

A

## 1. RESISTORS:

Indicated in  $\Omega$ ,  $\frac{1}{2}W$ ,  $\frac{1}{2}W$ ,  $\pm 5\%$  tolerance unless otherwise noted k :  $k\Omega$ , M :  $M\Omega$ , (F) :  $\pm 1\%$ , (G) :  $\pm 2\%$ , (K) :  $\pm 10\%$  (M) ;  $\pm 20\%$  tolerance

## 2. CAPACITORS:

Indicated in capacity ( $\mu F$ )/voltage (V) unless otherwise noted p :  $pF$   
Indication without voltage is 50V except electrolytic capacitor.

## 3. VOLTAGE

 $\square$  : DC voltage (V) at no input signal

## 4. OTHERS:

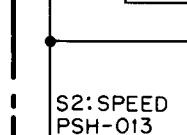
→ : Signal route.

◎ : Adjusting point.

The mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

B

**SWITCH BOARD ASSEMBLY**


C

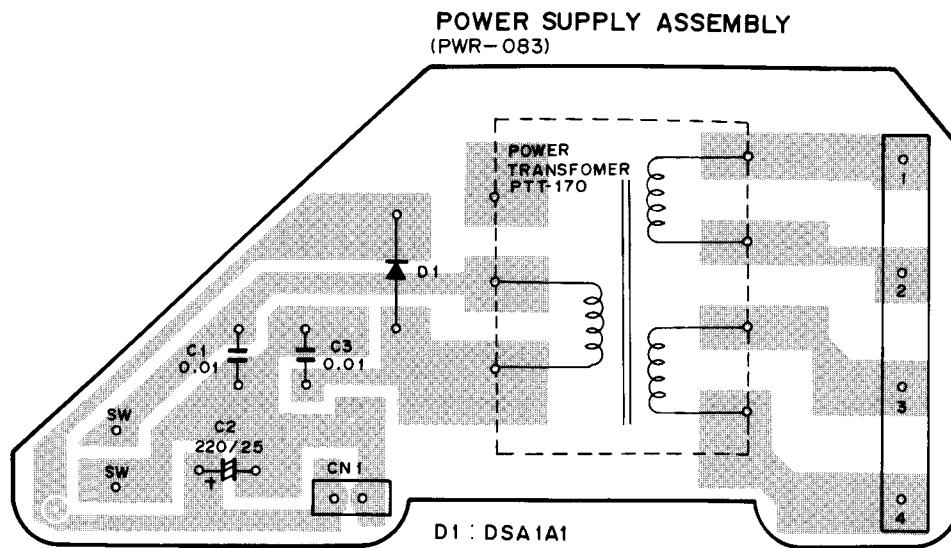
C

2

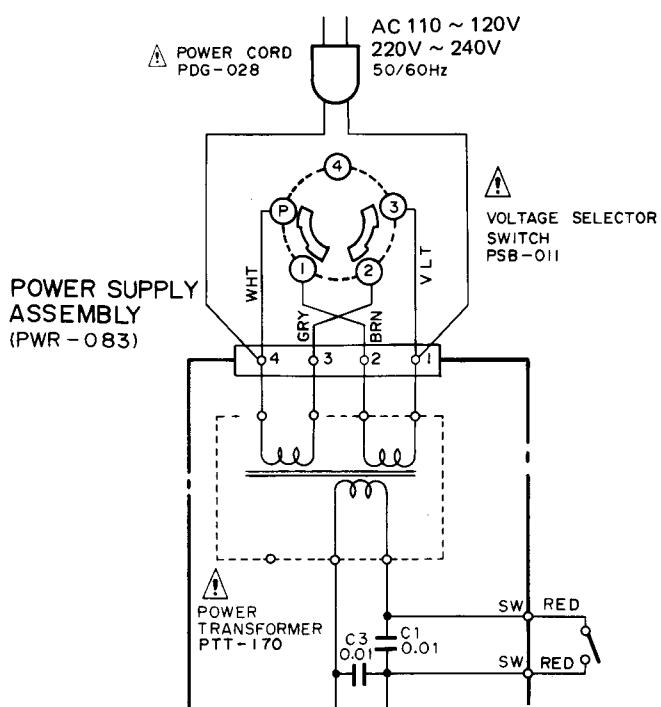
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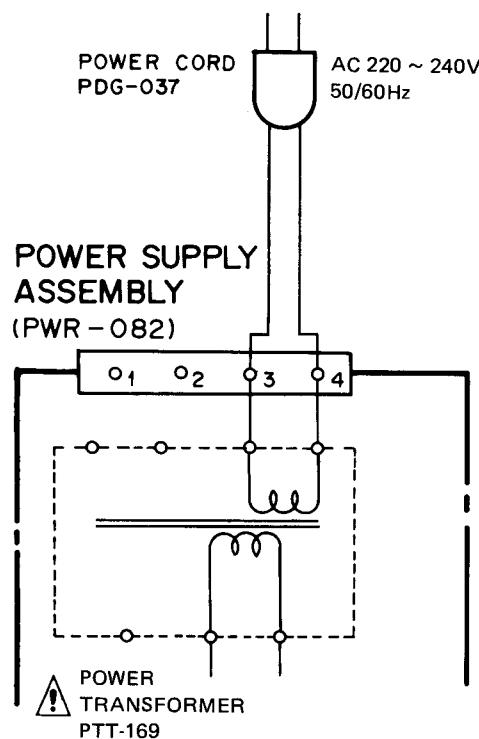
**R type P.C. Board Pattern**



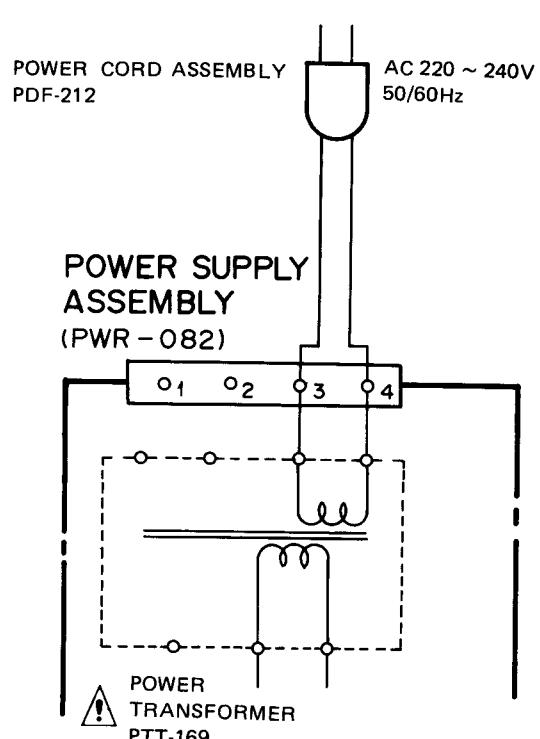
**R type Schematic Diagram**



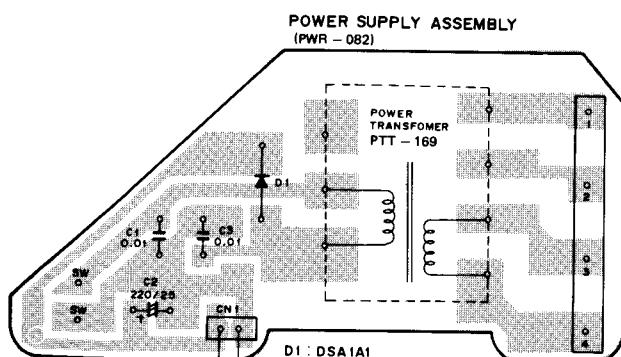
**WEM Type Schematic Diagram**



**WB Type Schematic Diagram**



**WEM, WB Type P.C. Board Pattern**



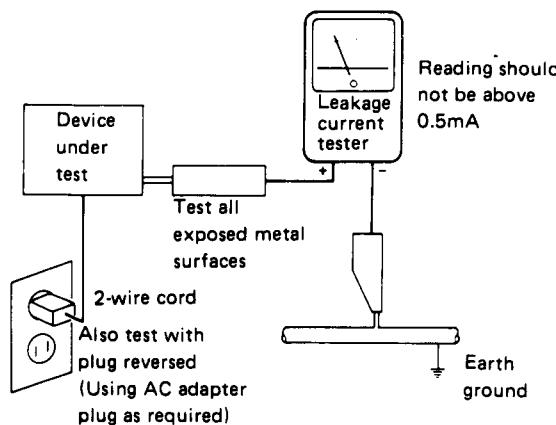
## 13. SAFETY INFORMATION

### 1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technical.

#### LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

### 2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a  $\Delta$  on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.